

CLAIMS

1. (Amended) A fuel cell comprising:

an electrolyte layer made from a solid oxide;

5 a catalytic metal part including a catalytic metal for accelerating a reaction of a reaction active material supplied to the fuel cell during generation of electricity in the fuel cell, wherein the catalytic metal is a noble metal; and
a decomposition reaction suppress part disposed between the electrolytic layer and the catalytic metal part for suppressing a decomposition reaction of the
10 solid oxide due to the catalytic metal, wherein the decomposition reaction suppress part has ion conductivity for allowing ions of a same type of conductivity to pass through the electrolyte layer.

2. A fuel cell in accordance with claim 1, wherein

15 the decomposition reaction suppress part is constructed with a decomposition-resistant material that has lower decomposition reactivity for decomposing due to the catalytic metal than the solid oxide.

3. A fuel cell in accordance with claim 2, wherein

20 the decomposition reaction suppress part is formed in a layer form for covering the electrolyte layer surface with the decomposition-resistant material, and

the catalytic metal part is disposed on the decomposition reaction suppress part.

25

4. A fuel cell in accordance with claim 2, wherein

the catalytic metal part is formed with catalytic metal dispersed in a support formation in a granular state on the electrolyte layer, and the decomposition reaction suppress part is formed with the decomposition-resistant material for covering a part of a granular surface of the 5 catalytic metal such as to be interposed between grains of the catalytic metal and the electrolytic layer.

5. A fuel cell in accordance with claim 1, wherein
the decomposition reaction suppress part is formed with a low
10 decomposition material that has lower activity for decomposing the solid oxide
than the catalytic metal.

6. A fuel cell in accordance with claim 5, wherein the low decomposition
material also has conductivity.

15
7. A fuel cell accordance with claim 1 or claim 6, wherein
the decomposition reaction suppress part is formed in a layer form to cover
the electrolyte layer surface with the low decomposition material, and
the catalytic metal part is disposed on the decomposition reaction suppress
20 part.

8. A fuel cell in accordance with claim 1 or Claim 6, wherein
the catalytic metal part is formed with catalytic metal dispersed in a support formation in a granular form on the electrolyte layer, and
25 the decomposition reaction suppress part is formed with the low decomposition material for covering a part of a grain surface of the catalytic

metal such as to be interposed between grains of the catalytic metal and the electrolyte layer.

9. (Amended) A fuel cell comprising:

5 a catalytic metal part including a catalytic metal for accelerating a reaction of a reaction active material supplied to the fuel cell during production of electricity in the fuel cell, wherein the catalytic metal is a noble metal; and
an electrolyte layer formed with a solid oxide, disposed adjacent to the catalytic metal part, and having a decomposition reaction suppress part for
10 suppressing a decomposition reaction of the solid oxide due to the catalytic metal.

10. A fuel cell in accordance with claim 9, wherein

the decomposition reaction suppress part is a region that is formed near a surface on a side of the electrolyte layer adjacent to the catalytic metal part, and
15 that has lower grain boundary density of the solid oxide than other regions in the electrolyte layer.

11. A fuel cell in accordance with claim 9, wherein

the decomposition reaction suppress part is a region that is formed near a
20 surface on a side of the electrolyte layer adjacent to the catalytic metal part, and
the solid oxide has lower decomposition reactivity for decomposition due to
the catalytic metal than other regions in the electrolyte layer.

12. A fuel cell in accordance with claim 11, wherein the solid oxide for

25 forming the decomposition reaction suppress part has lower ion conductivity than
the solid oxide for forming the other regions.

13. A fuel cell in accordance with any one of Claims 1 to 3, 5 to 7, or 9 to 12, wherein

the solid oxide has proton conductivity,

the catalytic metal is a hydrogen permeable metal, and

5 the catalytic metal part is a fine hydrogen permeable metal layer for covering the decomposition reaction suppress part disposed on the electrolyte layer.